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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,168	01/04/2002	Burkhard Standke	211599US0	1767

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EXAMINER

FEELY, MICHAEL J

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/035,168

Applicant(s)

STANDKE ET AL.

Examiner

Michael J Feely

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-32 and 36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4, 5, 8-21 and 24-32 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 22 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>0303</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Pending Claims

1. Claims 4-32 and 36 are pending.

Specification

2. The previous objection to the disclosure has been overcome by amendment.

Claim Objections

3. The previous objection to claims 15 and 31 has been overcome by amendment.
4. Claims 7 and 23 are objected to because of the following informalities: these claims feature improper Markush language. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. The previous rejection of claim 1 under 35 U.S.C. 112, second paragraph, has been rendered moot by the cancellation of claim 1.
7. The previous rejection of claims 4-19 under 35 U.S.C. 112, second paragraph, has been overcome by amendment.
8. The previous rejection of claims 13 and 29 under 35 U.S.C. 112, second paragraph, has been overcome by amendment.
9. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Regarding claim 13, silicon compound A is defined as having at least one hydrolyzable group and at least two organofunctional groups; and silicon compound B is defined as having at least one hydrolyzable group and at least one organofunctional group (*see independent claim 36*). However claim 13 recites that one or both of the silicon compound A and B is an organosilane of general formula I: $R^1_x R^2_y SiZ_{(4-x-y)}$ wherein $(x+y) \leq 3$. It is unclear how this can be.

It appears that for compound A, the following would apply: $2 \leq (x+y) \leq 3$; and for compound B, the following would apply: $1 \leq (x+y) \leq 3$.

Regarding claim 29, silicon compound A is defined as having at least one hydrolyzable group and at least one organofunctional group; and silicon compound B is defined as having at least one hydrolyzable group (*see independent claim 20*). However claim 19 recites that one or both of the silicon compound A and B is an organosilane of general formula I: $R^1_x R^2_y SiZ_{(4-x-y)}$ wherein $(x+y) \leq 3$. It is unclear how this can be.

It appears that for compound A, the following would apply: $1 \leq (x+y) \leq 3$; and for compound B, the following would apply: $(x+y) \leq 3$.

Claim Rejections - 35 USC § 102/103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. The rejection of claims 33 and 34 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yoneda et al. (US Pat. No. 5,576,109) or Ikenaga et al. (US Pat. No. 6,165,619) has been rendered moot by the cancellation of claims 33 and 34.

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12. The rejection of claim 35 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ikenaga et al. (US Pat. No. 6,165,619) has been rendered moot by the cancellation of claim 35.

Previously Indicated Allowable Subject Matter

13. The indicated allowability of claims 4, 5, 8-21, and 24-32 is withdrawn in view of the newly discovered reference(s) to Humphrey, Jr. (US Pat. No. 4,235,954). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 4, 5, 8-11, 13-21, 24-27, 29-32, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by Humphrey, Jr. (US Pat. No. 4,235,954).

Regarding claims 36, 4, 8-11, and 13-18, Humphrey, Jr. discloses (36) a process for modifying the surface of an organofunctional substrate (Abstract) comprising the steps of: a) applying a silicon compound A to the surface of a organofunctional substrate (Abstract) wherein said silicon compound A comprises at least two organofunctional groups, and comprises at least one hydrolyzable group selected from the group consisting of chloro, alkoxy, carboxy, ad hydroxyl (column 9, lines 17-39); wherein at least one of the organofunctional groups is capable of undergoing a crosslinking reaction upon exposure to UV radiation (Abstract; column 9, line 40 through column 10, line 17), and wherein the silicon compound A is *capable* of forming a

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polymer bearing a silyl group (*inherent*: column 9, lines 17-39), b) reacting an organofunctional group of the silicon compound A with the surface of an organofunctional substrate to form a polar surface (Abstract), c) exposing the polar treated surface to UV radiation to initiate crosslinking between the at least one of the organofunctional groups of the silicon compound A capable of undergoing a crosslinking reaction upon exposure to UV radiation (Abstract); d) applying a silicon compound B to the polar treated surface (Abstract), said silicon compound B comprising at least one organofunctional group and at least one hydrolyzable group selected from the group consisting of chloro, alkoxy, carboxy, and hydroxyl (column 12, lines 18-54); wherein the silicone compound B may be the same or different from the silicon compound A (column 12, lines 18-54);

(4) wherein at least one of the at least two organofunctional groups of the silicon compound A is a linear, branched or cyclic alkyl group having from 1 to 20 carbon atoms and may optionally be substituted with a halogen or an alkenyl group having from 2 to 16 carbon atoms (column 9, line 40 through column 10, line 17);

(8) wherein a method used to apply the silicon compound B is spraying, dipping, drenching, brushing, polishing, rolling, doctoring, CVD, or PVD (column 13, lines 27-34);

(9) further comprising heat treating the organofunctional substrate after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional substrate, after applying the organofunctional silicon compound B to the polar treated surface or both (column 13, lines 27-34);

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(10) wherein the organofunctional substrate is heated from 80 to 120°C for from 0.5 to 2 hours after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional substrate (column 13, line 27-34);

(11) wherein the organofunctional substrate is heated from 100 to 200°C for from 0.5 to 2 hours after applying the organofunctional silicon compound B to the polar treated surface (column 13, lines 27-34);

(13) wherein one or both of silicone compounds A and B is an organosilane of the general formula I: $R^1_x R^2_y SiZ_{(4-x-y)}$ (I) wherein the groups R^1 and R^2 are identical or different, and each is (*see list in the claim*), Z is a chloro, a methoxy, ethoxy, isopropoxy, 2-methoxyethoxy or acetoxy group, and x is 1, 2, or 3, and y is 0, 1, or 2, *for compound A, the following would apply: $2 \leq (x+y) \leq 3$; and for compound B, the following would apply: $1 \leq (x+y) \leq 3$, or an organosiloxane based on at least one organosilane of the general formula I (column 9, lines 17-39; column 12, lines 24-54);*

(14) wherein one or both of silicon compounds A and B is present in monomeric, oligomeric, cocondensed, dissolved, emulsified, or suspended form (column 11, lines 39-54; column 12, lines 24-59);

(15) wherein the organofunctional substrate comprises a plastic, fiber or natural substance (Abstract);

(16) wherein the organofunctional substrate is selected from the group consisting of polyethylene, polypropylene, polyamide, polyester, polyacrylate, polyurethane, polystyrene, polycarbonate, polyvinyl chloride, polyethylene terephthalate, silicone, melamine resin, carbon

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fiber, furan resin, alkyd resin, bismaleimidetriazine, ethylene-vinyl acetate copolymer, acrylonitrile-butadiene-styrene copolymer, wood and rubber (Abstract);

(17) a surface-modified substrate produced by the process as claimed in claim 36 (Abstract); and

(18) a product comprising a surface modified substrate produced by the process as claimed in claim 36 (Abstract; column 1, lines 31-38).

Regarding claim 5, Humphrey, Jr. discloses the process of claim 36, wherein the silicone compound A is applied to the substrate in the presence of: an acid or base (column 10, lines 38-46 and 56-63), a solvent (column 10, lines 38-46; column 11, lines 44-47), and at least one free radical generator (column 10, lines 38-62). *It should be noted that some of free radical generators set forth in Humphrey, Jr. satisfy "the presence of: and acid or base and at least one free radical generator."*

He does not explicitly disclose that at least one of the at least two organofunctional groups of silicone compound A *is reacted with the surface of the organofunctional substrate by the addition of the acid or base*. However, where reference teaches all the limitations of the composition, the interaction/reaction would have inherently taken place.

It has been found that, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding claim 19, Humphrey, Jr. disclose a coated article made by the process of claim 36; however, they do not explicitly disclose a process for repelling water, oil, dirt, dust, paint, microorganisms or bacteria by using the coated article. However, where the reference teaches all the limitations of the coated article, the coated article would have inherently repelled water, oil, dirt, dust, paint, microorganisms or bacteria.

It has been found that, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding claim 20, Humphrey, Jr. discloses (20) a process for modifying the surface of an organofunctional substrate (Abstract) comprising reacting an organofunctional group of a silicon compound A with the surface of an organofunctional substrate to form a polar treated surface (Abstract), wherein the silicon compound A comprises at least one organofunctional group and at least one chloro, alkoxy, carboxy, or hydroxyl group, and further wherein said silicon compound A may react to form a polymer bearing silyl groups (column 9, lines 17-39), then applying to the polar treated surface an organofunctional silicon compound B (Abstract), wherein the silicon compounds A and B may be identical or different, the silicon compound B bears at least one chloro, alkoxy, carboxy or hydroxyl group, and the silicon compound B reacts with the polar treated surface (column 12, lines 24-59), wherein the silicone compound A is applied to the substrate in the presence of: an acid or base (column 10, lines 38-46 and 56-63), a solvent (column 10, lines 38-46; column 11, lines 44-47), and at least one free radical generator

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(column 10, lines 38-62). *It should be noted that some of free radical generators set forth in Humphrey, Jr. satisfy "the presence of: and acid or base and at least one free radical generator."*

He does not explicitly disclose that at least one of the at least two organofunctional groups of silicone compound A *is reacted with the surface of the organofunctional substrate by the addition of the acid or base.* However, where reference teaches all the limitations of the composition, the interaction/reaction would have inherently taken place.

It has been found that, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present – *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding claims 21, 24-27, and 29-32, Humphrey, Jr. discloses the process of claim 20, wherein:

(21) wherein at least one of the at least two organofunctional groups of the silicon compound A is a linear, branched or cyclic alkyl group having from 1 to 20 carbon atoms and may optionally be substituted with a halogen or an alkenyl group having from 2 to 16 carbon atoms (column 9, line 40 through column 10, line 17);

(24) wherein a method used to apply the silicon compound B is spraying, dipping, drenching, brushing, polishing, rolling, doctoring, CVD, or PVD (column 13, lines 27-34);

(25) further comprising heat treating the organofunctional substrate after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional

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substrate, after applying the organofunctional silicon compound B to the polar treated surface or both (column 13, lines 27-34);

(26) wherein the organofunctional substrate is heated from 80 to 120°C for from 0.5 to 2 hours after reacting the organofunctional group of the silicon compound A with the surface of the organofunctional substrate (column 13, line 27-34);

(27) wherein the organofunctional substrate is heated from 100 to 200°C for from 0.5 to 2 hours after applying the organofunctional silicon compound B to the polar treated surface (column 13, lines 27-34);

(29) wherein one or both of silicone compounds A and B is an organosilane of the general formula I: $R^1_x R^2_y SiZ_{(4-x-y)}$ (I) wherein the groups R^1 and R^2 are identical or different, and each is (*see list in the claim*), Z is a chloro, a methoxy, ethoxy, isopropoxy, 2-methoxyethoxy or acetoxy group, and x is 1, 2, or 3, and y is 0, 1, or 2, *for compound A, the following would apply: $1 \leq (x+y) \leq 3$; and for compound B, the following would apply: $(x+y) \leq 3$* , or an organosiloxane based on at least one organosilane of the general formula I (column 9, lines 17-39; column 12, lines 24-54);

(30) wherein one or both of silicon compounds A and B is present in monomeric, oligomeric, cocondensed, dissolved, emulsified, or suspended form (column 11, lines 39-54; column 12, lines 24-59);

(31) wherein the organofunctional substrate comprises a plastic, fiber or natural substance (Abstract); and

(32) wherein the organofunctional substrate is selected from the group consisting of polyethylene, polypropylene, polyamide, polyester, polyacrylate, polyurethane, polystyrene,

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polycarbonate, polyvinyl chloride, polyethylene terephthalate, silicone, melamine resin, carbon fiber, furan resin, alkyd resin, bismaleimide triazine, ethylene-vinyl acetate copolymer, acrylonitrile-butadiene-styrene copolymer, wood and rubber (Abstract).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claims 12 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphrey, Jr. (US Pat. No. 4,235,954) in view of Moncur et al. (US Pat. No. 5,378,535).

Regarding claims 12 and 28, Humphrey, Jr. does not disclose a pre-cleaning of the substrate in his method.

Moncur et al. disclose an organosilane primer system for silicone elastomers bonded to glass or plastic substrates (Abstract), including polycarbonates (column 3, lines 2-4), wherein the primer consists: a) of a thin layer of a silica-based adhesion promoter which is applied directly to the substrate, and b) an organosilane primer containing (i) silanol or functional groups that can be hydrolyzed to silanol, and (ii) polymerizable alkene or silicone hydride functional groups, applied over the adhesion promoter layer (Abstract). They also disclose, "The substrates are preferably cleaned using techniques known in the art before the primer systems of the present invention are applied," (column 3, lines 12-15). Such a cleaning step would have eliminated dirt or other contamination on the substrate surface to ensure strong bonding of the primer system to the substrate. They do not explicitly disclose the use of at least one acidic aqueous solution,

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basic aqueous solution, acid alcoholic solution or basic alcoholic solution; however, one skilled in the art would have appreciated that these cleaning solutions would have been "suitable techniques known in the art," in order to clean the substrate surface.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to pre-clean the substrate, as taught by Moncur et al., in the method of Humphrey, Jr. because Moncur et al. teach a coating method analogous to that of Humphrey, Jr. wherein the substrates are preferably cleaned using techniques known in the art before the primer systems are applied, resulting in the elimination of dirt or other contamination on the substrate surface to ensure strong bonding of the primer system to the substrate.

Allowable Subject Matter

18. Claims 6, 7, 22, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 6 and 22, Humphrey, Jr. is the closest prior art; however, they provide no motivation to use an acid or base selected from the group consisting of hydrochloric acid, nitric acid, formic acid, acetic acid, phosphoric acid, sulfuric acid, an amine, sodium carbonate, sodium hydroxide, ammonium chloride, sodium acetate, and ammonium acetate.

Regarding claims 7 and 23, Humphrey, Jr. is the closest prior art; however, they provide no motivation to apply the organosilicon compound A in the presence of an acid or base, and in the presence of a free radical generator selected from the group consisting of di-tert-butyl peroxide, dicumyl peroxide, and di-benzoyl peroxide.

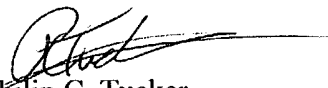
Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael J. Feely
Patent Examiner
Art Unit 1712



Philip C. Tucker
Primary Examiner
Art Unit 1712

June 3, 2004